



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,295	08/16/2001	David F. Craddock	AUS920010493US1	3184

7590

09/06/2005

Duke W. Yee
Carstens, Yee & Cahoon, LLP
P.O. Box 802334
Dallas, TX 75380

EXAMINER

RYMAN, DANIEL J

ART UNIT

PAPER NUMBER

2665

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/931,295	Applicant(s) CRADDOCK ET AL.	
	Examiner Daniel J. Ryman	Art Unit 2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-13, 15-23 and 25-30 is/are rejected.
- 7) ☒ Claim(s) 4, 14 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: ref. 110 (see pg. 8, line 18-pg. 15, line 3); ref. 800, 816, 88, 826, 830 (see pg. 27, line 7-pg. 28, line 15); ref. 1120 (see pg. 33, line 7-pg. 34, line 25); ref. 1454, 1480 (see pg. 37, line 28-pg. 39, line 10); and ref. 1570, 1550 (see pg. 39, lines 11-29). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The abstract of the disclosure is objected to because it exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).
3. The disclosure is objected to because of the following informalities: on pg. 12, line 13, "router 116" should be "router 117"; on pg. 22, line 21, "node 2" should be "node 3"; on pg. 22,

line 23, "node 3" should be "node 2"; on pg. 22, line 29, "one an only" should be "one and only"; and on pg. 29, line 13, "port 1006" should be "port 906".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 11-13, and 21-23, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. (USPN 6,832,310) in view of Erimli et al. (USPN 6,480,500).

6. Regarding claims 1, 11, and 21, Bailey discloses a method of and apparatus for establishing a connection between a first node (ref. 10A) and a second node (ref. 10B) in a system area network (ref. 50: Infiniband system) (col. 3, lines 8-35), the method comprising the steps of and the apparatus comprising means for: allocating a virtual connection unit pair (queue pair with virtual address) to the connection (col. 3, lines 57-60), the virtual connection unit pair being associated with the first node (col. 1, lines 31-48; col. 3, line 61-col. 4, line 1; and col. 4, lines 27-45).

Bailey does not expressly disclose establishing the connection between the virtual connection unit pair of the first node and a connection unit pair of the second node; and transmitting one or more messages between the first node and the second node over the connection using the virtual connection unit pair. However, Bailey does disclose that the virtual connection pair is used to establish a connection between two nodes (col. 3, lines 57-60). Erimli

Art Unit: 2665

teaches, as part of the InfiniBand system, establishing a connection between the connection unit pair of the first node and a connection unit pair of the second node (col. 1, lines 51-54; col. 3, line 61-col. 4, line 27; and col. 4, line 66-col. 5, line 12); and transmitting one or more messages between the first node and the second node over the connection using the virtual connection unit pair (col. 1, lines 51-54; col. 3, line 61-col. 4, line 27; and col. 4, line 66-col. 5, line 12). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to establish the connection between the virtual connection unit pair of the first node and a connection unit pair of the second node; and to transmit one or more messages between the first node and the second node over the connection using the virtual connection unit pair since transmission of messages between nodes through established connections is part of the Infiniband system.

7. Regarding claims 2, 12, and 22, Bailey in view of Erimli discloses that the connection unit pair is a queue pair (Bailey: col. 3, line 61-col. 4, line 1 and Erimli: col. 3, line 61-col. 4, line 3).

8. Regarding claims 3, 13, and 23, Bailey in view of Erimli discloses that the connection unit pair is an end-to-end context (Bailey: col. 3, lines 57-60 and Erimli: col. 1, lines 51-54; col. 3, line 61-col. 4, line 27; and col. 4, line 66-col. 5, line 12, esp. col. 5, lines 19-22) where the queue pair defines an end-to-end connection between two nodes.

9. Claims 5, 15, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. (USPN 6,832,310) in view of Erimli et al. (USPN 6,480,500) as applied to claims 1, 11, and 21 above, and further in view of Khalidi et al. (USPN 6,405,237).

Art Unit: 2665

10. Regarding claims 5, 15, and 25, Bailey in view of Erimli discloses that allocating a virtual connection unit pair to the connection includes: creating the virtual connection unit pair (Bailey: col. 3, line 61-col. 4, line 1 and col. 4, lines 27-30 and Erimli: col. 8, lines 35-51); and associating a virtual connection unit pair identifier of the virtual connection unit pair with a physical connection unit pair (physical registers of hardware) of the first node (Bailey: col. 4, lines 34-45 and Erimli: col. 8, lines 18-21).

Bailey in view of Erimli does not expressly disclose selecting the virtual connection unit pair from a virtual connection unit pair pool. Khalidi teaches, in a system for transferring data over a network, using a pool of virtual buffers in order to “take advantage of locality in interprocess communication” (col. 1, line 66-col. 2, line 7 and col. 6, lines 6-9). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to select the virtual connection unit pair from a virtual connection unit pair pool in order to take advantage of locality in interprocess communication.

11. Claims 6-9, 16-19, and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. (USPN 6,832,310) in view of Erimli et al. (USPN 6,480,500) as applied to claims 1, 11, and 21 above, and further in view of Applicant’s Admitted Prior Art.

12. Regarding claims 6, 16, and 26, Bailey in view of Erimli discloses tearing down the connection between the first node and the second node (Erimli: col. 4, line 66-col. 5, line 12). Bailey in view of Erimli does not expressly disclose that tearing down the connection includes placing the virtual connection unit pair in a time-wait state. Applicant admits as prior art that tearing down the connection includes placing the virtual connection unit pair in a time-wait state “in order to make sure that all data packets in the SAN fabric at the time the connection is torn

Art Unit: 2665

down have time to be routed to their destination” (pg. 2, line 27-pg. 3, line 9). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have tearing down the connection include placing the virtual connection unit pair in a time-wait state in order to make sure that all data packets in the SAN fabric at the time the connection is torn down have time to be routed to their destination.

13. Regarding claims 7, 17, and 27, Bailey in view of Erimli in further view of Applicant suggests that a physical connection unit pair associated with the first node is not placed in a time-wait state (Bailey: Fig. 5 and col. 5, line 50-col. 6, line 29) where the hardware is able to act upon WQEs from different virtual queue pairs.

14. Regarding claims 8, 18, and 28, Bailey in view of Erimli in further view of Applicant suggests that a physical connection unit pair associated with the first node is used to establish another connection while the virtual connection unit pair is in the time-wait state (Bailey: Fig. 5 and col. 5, line 50-col. 6, line 29) where the hardware is able to act upon WQEs from different virtual queue pairs.

15. Regarding claims 9, 19, and 29, Bailey in view of Erimli in further view of Applicant suggests that placing the virtual connection unit pair in a time-wait state includes setting an availability bit (Busy Bit) associated with the virtual connection unit pair (Bailey: col. 4, line 65-col. 5, line 1 and col. 5, lines 22-45) where this would indicate that the queue-pair is not free.

16. Claims 10, 20, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. (USPN 6,832,310) in view of Erimli et al. (USPN 6,480,500) in further view of Khalidi et al. (USPN 6,405,237) as applied to claims 5, 15, and 25 above, and further in view of Applicant’s admitted prior art.

Art Unit: 2665

17. Regarding claims 10, 20, and 30, Bailey in view of Erimli in further view of Khalidi suggests that the virtual connection unit pair is selected from virtual connection unit pairs in the virtual connection unit pair pool that are not in a busy state (Bailey: col. 5, lines 22-29). Bailey in view of Erimli in further view of Khalidi does not expressly disclose that the busy state is a time-wait state. However, Bailey in view of Erimli in further view of Khalidi does disclose tearing down connections (Erimli: col. 4, line 66-col. 5, line 12). Applicant admits as prior art that tearing down the connection includes placing the virtual connection unit pair in a time-wait state “in order to make sure that all data packets in the SAN fabric at the time the connection is torn down have time to be routed to their destination” (pg. 2, line 27-pg. 3, line 9). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the busy state include a wait-time in order to make sure that all data packets in the SAN fabric at the time the connection is torn down have time to be routed to their destination.

Allowable Subject Matter

18. Claims 4, 14, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art discloses that the virtual connection unit pair comprises an availability bit (Busy Bit) (Bailey: col. 4, line 65-col. 5, line 1 and col. 5, lines 22-45) and a virtual connection unit pair identifier (Bailey: col. 4, line 65-col. 5, line 1 and Erimli: col. 5, lines 19-22). However, the prior art does not disclose or fairly suggest that the virtual connection unit pair has *only* a virtual connection unit pair identifier and an availability bit.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 7:00-4:30 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel J. Ryman
Examiner
Art Unit 2665



HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600